Periscope.

a.—ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

ANASTOMOSES OF GANGLIONIC CELLS.—J. Carriere *Arch. f. mikr. Anat.* XIV. 125, abstr. in *Centralblatt*, No. 37, 1877) isolated the elements of the anterior spinal cornua, (of a calf of four weeks) in dilute solutions of bichromate of potassium and chromate of ammonium, and succeeded in finding seven specimens containing indubitable anastomoses of ganglionic cells. Cells of different sizes commensurate with each other, both of long processes and short bridges. Occasionally C. found a web-like expansion of the protoplasm between the separating branches of some ganglionic processes.

INDUCED CONTRACTION.—J. J. Friedrich (Note by Hering in *Weiner Acad. Sitzungsberichtr.* LXXIV., | 413) has experimentally found, that the tetanus caused by the make and break of a constant current applied to the nerve will not induce a secondary tetanus in a sensitive nerve-muscle preparation. Still, the conclusion is not warranted that this mode of tetanus is a continuous process, as compared with the tetanus produced by interrupted irritation. For it is possible that the separate vibrations do not occur synchronously in the different fibres of the muscle, and hence produce interference. A *single* induced contraction (Zuckung) was often induced by the make—tetanus rarely by the break. In some cases a single induced contraction occurred during the closure of a powerful ascending current, which produced *no* contraction at all in the primary muscle. Occasionally Friedrich found also an induced contraction at the end of a make—tetanus on breaking or reversing the current.

Strychnia-tetanus of muscles of mammals and frogs caused, when tonic, an induced contraction but no tetanus; when clonic, several single contractions. Frequently, also, no induced contractions occurred at all. Similarly Hering observed that the tetanic contractions of the diaphragm induced a single initial contraction of the nerve-muscle preparation, but no tetanus. The heart induces only single contractions, but evidently this result does not determine whether the cardiac contractions are single or tetanic in nature.

Several experiments have been made by Morat and Toussaint in Bernard's laboratory, (*Comptes Rendus* No. 22, LXXXIII., No. 2 and 12)

showing that voluntary contraction of muscles of the frog induces either no secondary contraction at all, or a single initial or several single contractions.

On irritating the nerve of the primary muscle with an induced current, the interruptions of which are of exactly the frequency necessary to maintain a constant tetanus, the induced tetanus of the secondary muscle will not be perfectly constant. It becomes constant, however, on increasing the number of interruptions. On increasing the number still further, there occurs instead, in the secondary nerve-muscle preparation, a brief initial tetanus, or merely a single initial contraction. The same occurs when the separate contractions of the primary muscle are prolonged by fatigue. In the latter case the electric intensity of the primary muscle is weakened by the fusion of the separate negative variation due to each contraction. Like Friedrich, the authors also found the tetanus of constant currents accompanied by a single initial, rarely terminal induced contraction. (*Centralblatt*, No. 37, 1877.)

THE CEREBRAL CONVOLUTIONS.—Prof. Ad. Pansch mentions in the *Centralblatt*, (No. 36, 1877) the general results of several years researches on the cerebral convolutions.

I. The furrows and convolutions of the cerebrum are the manifestation of folds, the mode of origin of which is but partly known.

II. The arrangement of the folds follows certain laws, and is always the same in the same class of animals. According to the type of the cerebral convolutions, mammals can be divided into smaller and larger groups. Certain variations occur in every type, their number increasing with the complication of the type.

III. The first appearance of furrows on the smooth brain of the fœtus consists usually of short, sharp incisures. Their elongation is either direct or due to the fusing of adjacent furrows. Later furrows also arise as shallow indentations.

IV. Not all furrows originate simultaneously; their development requires periods of different length before and after birth, according to the species.

V. The furrows first in appearance are in any one class, or even in a larger group, almost always the same, and in the same position, (constant primary furrow). This is most strictly the case among the simpler types, less so among the more complicated ones. All furrows arising subsequently are subjected to greater variation in shape and position, the more the later their appearance, and the more complicated the type.

VI. The growth in depth of the furrows in the course of their development is a rather uniform process. The furrows last in appearance remain shallow, the earlier ones are always deep. Thus the history of development of the furrows can be traced in the adult brain by their depth.

VII. The growth of two convolutions separated by a furrow is usually uniform, and thus the walls of the furrow become perpendicular to the surface of the cortex. But irregularities also occur, so that either the